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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,807	01/16/2004	Boo Jorgen Lars Nilsson	DSI1P001	8259

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BEYER WEAVER & THOMAS, LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

EXAMINER	
VU, PHU	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/759,807	NILSSON, BOO JORGEN LARS	
	Examiner	Art Unit	
	Phu Vu	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38-67 and 70-94* is/are pending in the application.

4a) Of the above claim(s) *42,43,45-48,50,61-63,71,74,75,78,82-84 and 88-90* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38-41,44,49,51-60,64-67,70,72,73,76,77,79-81,85-87 and 91-94* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of species IA, IIA, IVB VB and VIIA is acknowledged. Claims 42, 43, 45-48, 50, 61-63, 71, 74, 75, 78, 82-84 and 88-90 have been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 38-41, 44, 49, 54, 57, 70, 72-73, 76-77, 79-81, 85 and 93-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drzaic et al. 7030412 in view of Roman et al. 6852555.

Regarding claims 38-41, 44, 54, 57, 70, 72-73, 76 and 80 Drzaic teaches display comprising thin film diodes with organic semiconductors (column 3 line 40-column line 10 and column 11 lines 1-3) used as the driving mechanism for a liquid crystal display however does omits a detailed the process for forming them. Roman teaches a method of manufacturing a TFD (two-terminal switching device) comprises forming a first electrode of the switching device, depositing an organic semiconductor from solution comprising semiconductor and solvent over at least a portion of the first electrode, and forming a second electrode over at least a portion of the semiconductor and overlying at least a portion of the first electrode (see column 2 lines 64-68, column

5 lines 15-30 and fig. 2c) that provides high conductivity, high rectification ratios and superior charge injection properties (see column 2 lines 23-34). Roman discloses the organic semiconductor used is a conjugated polymer with a backbone unit consisting at least thiophenes (see column 3 lines 1-10).

Regarding claim 49, Drzaic discloses an unpatterned semiconductor layer to reduce costs, however discloses this is only tolerable for displays such as grayscale or monochrome type as they have a higher tolerance for leakage current (column 4 lines 20-45). Drzaic also discloses the semiconductor layer can be patterned to reduce crosstalk, therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to pattern the semiconductor to reduce crosstalk.

Regarding claim 77, 79, 81, 85 and 93-94, Roman shows the diode characteristics as having a rectification ratio of at least 10^5 (see fig. 3f) and has an asymmetric voltage curve (see fig. 3a-3e) and also that the two-terminal switching device has a ratio of 10^3 to 10^9 between a current passing at a voltage at which the switching device is on and a current passing at a voltage where the switching device is off (see figs 3a-3f).

Claims 51-53 rejected under 35 U.S.C. 103(a) as being unpatentable over Drzaic in view of Roman and further in view of Sturm 6087196.

Regarding claim 51-53, the references teach all the limitations of claims 51-53, except deposition of the substrate by ink-jet printing. Sturm teaches a deposition method for organic materials that can use commercially available inkjet printers (see column 2 lines 15-20). Therefore, at the time of the invention, it would have been

obvious to one of ordinary skill in the art to use an ink-jet printing method to deposit semiconductors because it allows patterning for organic semiconductor devices with commercially available hardware.

Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drzaic in view of Roman and further in view of Lamotte 6623903.

Regarding claim 55, the references teach all the limitations claims 55-56 except use of a organic conductor on the substrate and a substrate having a melting point less than 350 C. Lamotte teaches organic conductors that enable fabrication of electronics higher flexibility and lower weight. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to apply an organic conductor to enable fabrication of displays with higher flexibility and lower weight.

Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drzaic in view of Roman in view of Yamada 20020027636 and further in view of Ohya US 20020127821.

Regarding claim 56, the references discloses all the limitations of claim 56 except a substrate with melting point lower than 350 degrees Celsius. Yamada discloses use of a PET substrate that is flexible (see [0008] and [0094]). Ohya discloses PET has a melting point of 255 degrees (see [0111]). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a low-melting point substrate to gain flexibility.

Claim 58-60, 64, 86-87 and 91-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drzaic in view of Roman and further in view of Lamotte 6623903.

Regarding claims 58-60 and 86, Drzaic teaches display comprising thin film diodes with organic semiconductors (column 3 line 40- column line 10 and column 11 lines 1-3) used as the driving mechanism for a liquid crystal display however does omits a detailed the process for forming them. Roman teaches a method of manufacturing a TFD (two-terminal switching device) comprises forming a first electrode of the switching device, depositing an organic semiconductor from solution comprising semiconductor and solvent over at least a portion of the first electrode, and forming a second electrode over at least a portion of the semiconductor and overlying at least a portion of the first electrode (see column 2 lines 64-68, column 5 lines 15-30 and fig. 2c) that provides high conductivity, high rectification ratios and superior charge injection properties (see column 2 lines 23-34). Roman discloses the organic semiconductor used is a conjugated polymer with a backbone unit consisting at least thiophenes (see column 3 lines 1-10).

The references teach all the limitations claims 55-56 except use of a organic conductor of polyaniline on the substrate. Lamotte teaches organic conductors of polyaniline deposited from solution that enable fabrication of electronics higher flexibility and lower weight (see column 1 lines 1-30 and column 2 lines 20-30). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to

apply an organic conductor to enable fabrication of displays with higher flexibility and lower weight.

Regarding claims 64, Drzaic discloses an unpatterned semiconductor layer to reduce costs, however discloses this is only tolerable for displays such as grayscale or monochrome type as they have a higher tolerance for leakage current (column 4 lines 20-45). Drzaic also discloses the semiconductor layer can be patterned to reduce crosstalk, therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to pattern the semiconductor to reduce crosstalk.

Regarding claim 87 and 91-92, Roman shows the diode characteristics as having a rectification ratio of at least 10^5 (see fig. 3f) and has an asymmetric voltage curve (see fig. 3a-3e) and also that the two-terminal switching device has a ratio of 10^3 to 10^9 between a current passing at a voltage at which the switching device is on and a current passing at a voltage where the switching device is off (see figs 3a-3f).

Claims 65-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drzaic in view of Roman in view of Lamotte and further in view of Sturm 6087196.

Regarding claim 65-66, the references teach all the limitations of the claims except deposition of the substrate by ink-jet printing. Sturm teaches a deposition method for organic materials that can use commercially available inkjet printers (see column 2 lines 15-20). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use an ink-jet printing method to deposit

semiconductors because it allows patterning for organic semiconductor devices with commercially available hardware.

Claims 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drzaic in view of Roman in view of Lamotte in view of Yamada 2002/0027636 in view of Ohya US 20020127821.

Regarding claims 67, the references teach all the limitations claim 67, except except a substrate with melting point lower than 350 degrees Celsius. Yamada discloses use of a PET substrate that is flexible (see [0008] and [0094]). Ohya discloses PET has a melting point of 255 degrees (see [0111]). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a low-melting point substrate to gain flexibility.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562. The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu
Examiner
AU 2871

ANDREW SCHECHTER
PRIMARY EXAMINER